

REMARKS

Claims 1-14 are pending.

In Paragraph No. 3 of the Action, claims 1-10, 13 and 14 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by or, in the alternative, under 35 U.S.C. §103 as allegedly being obvious over Nishiyama et al (US 6,537,718 B2).

Applicants submit that this rejection should be withdrawn because Nishiyama et al does not disclose or render obvious the positive resist composition of the present invention.

The present invention relates to a positive resist composition. The resist composition includes (a) a resin, and (b) a compound that generates an acid upon irradiation with actinic rays or radiation. See independent claim 1.

As recited in claim 1, the resin (a) is decomposed by the action of an acid to increase its solubility in an alkali developing solution. The resin contains a structural unit having a group represented by formula (X) shown in claim 1, and has a weight average molecular weight of not more than 5,000. In addition, the resin contains an acid decomposable group in an amount of not more than 40% based on the sum total of the number of acid decomposable groups and the number of alkali-soluble groups not protected with acid decomposable groups.

The positive resist composition of the present invention is different from Nishiyama et al. A first distinction over Nishiyama et al is that while certain of the repeating units in certain of the formulas in Nishiyama et al would satisfy the limitations of formula (X) in present claim 1, none of the resins of Nishiyama et al presently relied upon by the Examiner (that is, resins (IV-22) and (IV-24) of Nishiyama et al) or previously relied upon (that is, the resins of formulas (IV-35), (IV-36), (IV-37) and (IV-43)) were employed in the working Examples of Nishiyama et al.

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A second distinction over Nishiyama et al is the requirement found in present claim 1 that the resin must have a weight average molecular weight of not more than 5,000. Nishiyama et al does not anticipate the recitation in present claim 1 that the resin (a) has a weight average molecular weight of not more than 5,000.

Nishiyama et al generically discloses (col. 38, lines 5-12) that “The weight average molecular weight (Mw) of the resin having the acid-decomposable group is preferably in a range of from 2,000 to 300,000.” The Examiner takes the position that since the purported “data point” of 2,000 is “clearly disclosed” as the lower limit of the claimed range, one skilled in the art would immediately envisage Nishiyama et al’s resin (B) to have the Mw of 2,000, and thus, the prior art teaches the present limitation as to the weight average molecular weight being not more than 5,000. See page 4 of the Action. The Examiner relies on the Atlas Powder v. Ireco and Ex parte Lee cases to support the section 102 anticipation aspect of the rejection, contending that neither case was overturned by Atofina v. Great Lakes Chemical.

With regard to the §102 anticipation aspect of the rejection, Applicants respectfully disagree with the Examiner’s position. The Examiner is incorrect as a matter of law. The Ex parte Lee decision is a decision of the Board of Patent Appeals and Interferences, which is not precedent insofar as the CAFC, the Board’s reviewing court, is concerned. To the extent Ex parte Lee is inconsistent with Atofina v. Great Lakes Chemical, which it clearly is, Ex parte Lee is effectively overruled by Atofina and should not be followed.

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In Lee, the claim called for a polyolefin resin “having a melt index of less than about 5 grams/10 minutes.” In this respect, the reference disclosed a “preferred” range of “melt index of ≥ 0.1 to ≤ 40 .”

A plurality of the Board stated:

In our view, the explicit disclosure of a composition based on a polyolefin resin having a melt index of 0.1 represents a specific disclosure of a discrete embodiment of the invention disclosed by Lee which amounts to a complete description and, thus, an anticipation of appellant’s claim 1. It has long been held that the disclosure in the prior art of any value within a claimed range is an anticipation of the claimed range. See, merely for example, *In re Wertheim*, We discern no reason for treating the specific value disclosed in the reference as the lower limit of a range any differently from any other single value disclosed in a reference.

See 31 USPQ2d at 1106.

The Board’s decision in Lee is plainly inconsistent with Atofina v. Great Lakes Chemical Corp., 78 USPQ2d 1417 (Fed. Cir. March 23, 2006), in which the Federal Circuit addressed this exact issue. In Atofina, the CAFC expressly held that “the disclosure of a range of 150 to 350 C does not constitute a specific disclosure of the endpoints of that range, i.e., 150 C and 350 C, as Great Lakes argues.” Id. at 1424. The court stated: “The disclosure is only that of a range, not a specific temperature in that range, and the disclosure of a range is no more a disclosure of the end points of the range than it is of each of the intermediate points.” Id.

Accordingly, Lee is effectively overruled to the extent it is inconsistent with Atofina.

The Examiner’s reliance upon Atlas Powder v. Ireco is also misplaced. In Atlas Powder, the issue of whether the disclosure of a range constitutes a specific disclosure of the endpoints of that range was not raised by the parties or discussed by the court. Accordingly, Atlas Powder is

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hardly “precedent” on this issue. Indeed, it was unnecessary for the court to address the issue, because the second anticipatory reference relied upon by the court (Butterworth) disclosed ranges which substantially overlapped every range recited in the Clay patent at issue. Still further, it is notable that Judge Rader, who wrote the opinion for the court in Atlas Powder, was on the panel in the Atofina case. He obviously did not believe the court’s decision in Atofina was inconsistent with Atlas Powder, because he joined the court’s opinion in Atofina without dissent or comment.

Atofina represents the present state of the law. The section 102 rejection in the present case is inconsistent with Atofina and should be withdrawn.

Turning to the section 103 aspect of the rejection, the Examiner states that while Mr. Shirakawa’s Declaration Under 37 CFR § 1.132 filed June 7, 2006 has been carefully considered, the burden is on Applicants to establish that the improved results are unexpected and *significant*. See page 7 of the Action. The Examiner states that even though there appears to be some improvements shown in Examples 1 and 2 (in terms of sensitivity, resolution, pattern profile and in vacuo PEB (post-exposure bake) properties) when compared to Comparative Example 1, Applicants have not established that those improvements are “significant.” See page 8 of the Action.

In response, Applicants submit a Supplemental Declaration Under 37 C.F.R. § 1.132 of Mr. Shirakawa to explain why the improved results obtained with the present invention are significant.

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In his previous Declaration, Mr. Shirakawa provided data showing that the resist composition of the present invention provides superior results in comparison to Nishiyama et al '718 with respect to sensitivity, resolution, pattern profile, and in vacuo PEB properties.

As Mr. Shirakawa explains at page 2 of his present, Supplemental Declaration, improvements in each of sensitivity, resolution , pattern profile and in vacuo PEB properties are recognized and understood by persons skilled in the photoresist art as being of practical significance. Mr. Shirakawa states that he considers the superior resolution and pattern profile results obtained with the positive photoresist of the present invention, relative to Nishiyama et al, to be of particular practical significance. Id.

As Mr. Shirakawa explains at page 2 of his Declaration, the minimum line width of half pitch indicating device evolution is improved in resolution by approximately 0.02 μm with every generation of new devices. The improved results achieved by the present invention, he notes, show improvement in resolution of 0.04 μm . See Table B at page 3 of Mr Shirakawa's previous Declaration. Thus, as Mr. Shirakawa states at page 2 of his Supplemental Declaration, the improved results obtained with the presently claimed resist indicate an effect for nearly preparing a device in the second future generation at once. Mr. Shirakawa states that this is a significant difference in the resist composition field, to which the present invention belongs.

With regard to pattern profile, Mr. Shirakawa explains that when an electron beam is used as an exposure source, deterioration in device performance may occur due to a tapered profile shape. See page 3 of Mr. Shirakawa's Supplemental Declaration. This is caused by forward scattering when an electron beam enters a resist film. Id. As Mr. Shirakawa notes,

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profile is an important factor affecting etching after the preparation of a resist pattern. Thus, he explains, making a rectangular profile is a significant effect. Mr. Shirakawa states that, as shown in his prior Declaration, the resist of the present invention provides a rectangular profile, whereas the resist of Nishiyama et al provided a slightly tapered profile. See Supplemental Declaration at p. 3.

For at least these reasons, the improved results obtained with the positive resist of the present invention are significant, from a practical standpoint, to those skilled in the art.

In view of the above, the Examiner is respectfully requested to reconsider and withdraw the §102(b)/§103(a) rejection of claims 1-10, 13 and 14 based on Nishiyama et al '718.

In Paragraph No. 4 of the Action, claims 11 and 12 are objected to as being dependent upon a rejected base claim. The Examiner states that these claims would be allowable if rewritten in independent form.

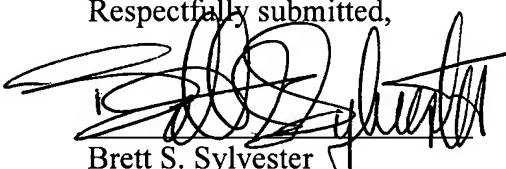
In view of the response to the preceding rejection, Applicants submit that claims 11 and 12 are allowable in their present form.

Allowance is respectfully requested. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Brett S. Sylvester
Registration No. 32,765

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE
23373
CUSTOMER NUMBER

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